Birds are also given considerable credit as predators upon the common cabbage worm. The species which "are known to feed upon cabbage worms are the chipping sparrow, English Sparrow, and house wren. It is certain, however, that other species eat them, and in one case it was found that during the winter the number of pupæ of the cabbage butterflies was reduced more than 90 per cent by birds feeding upon them." [1]

This is high praise for the birds and gives them commanding rank among predacious enemies of the cabbage worm. In the case of another injurious insect also, the velvet-bean caterpillar, it is said that the red-winged blackbird is the most important predatory enemy. Other birds feeding upon the pest are the mockingbird and field sparrow.[2]— W. L. M.

Annual Report of the National Association of Audubon Societies.— The Annual Report of the Audubon Societies [3] is a revelation to those who labored in the cause of wild bird protection twenty or more years ago, before public sentiment was aroused, and we think it is safe to say that the present development of the movement is far beyond their most sanguine expectations.

While the reports of the Secretary and the various special agents, are exceedingly interesting reading and the long list of members and contributors, most encouraging, we think the most significant feature is the series of reports from local societies of which nearly 100 are listed. These show how widespread is the interest in bird protection and what a tremendous hold it has upon the people of the country.

Another point in the development of the work is the apparent passing of the State Audubon Society except where it is well endowed or else purely local in character. Independent local clubs, conducted in accordance with the needs of the local community and working in affiliation with the National Association, seem to be the more natural form of development. While the State Societies did excellent service at the start it is impossible now to meet the demands made upon them without independent endowment, and the local organizations seem to turn naturally to the National Association as the central or affiliating body. The number and size of the units engaged in the work however are simply matters of organization, the objects attained are the same in any case.

In the introduction to his report Secretary Pearson calls attention to a very significant feature in the development of bird protection; that is the growing tendency of sportsmen's organizations to take up the cause of the non-game birds. These societies were established originally for the protection of game birds for food and for recreational shooting, and this extension of their activities is a recognition of the broader principle of the

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[1] Chittenden, F. H. The common cabbage worm. Farmers' Bull. 766, Nov., 1916, p. 9.

[2] Watson, J. R. Life-history of the velvet-bean caterpillar (Anticarsia gemmatilis Hübner), Journ. Ec. Ent. 9, No. 6, Dec., 1916, pp. 526–7.

[3] Annual Report of the National Association of Audubon Societies, Bird-Lore, January, 1917.

protection of wild life for its economic value to our trees, flowers and crops — and necessarily to man himself.

This report should be read through by every one interested in wild bird life and every reader will we feel sure join with us in congratulating the National Association and its officers upon the completion of a most successful year's work.— W. S.

Lloyd-Jones on Feather Pigments.[1]— This investigation while carried on primarily in connection with the study of color-inheritance in Pigeons, has an important bearing upon the general subject of coloration in birds. The author finds that there are only two pigments in domestic Pigeons, a red-brown, which produces the red and yellow colors, and a black, which under different conditions produces black, dun, blue and silver. In typical "red" birds the pigment granules are about 0.3 m. in diameter; in 'plum colored' individuals they are 2.0 m. or more, while in yellows they are so minute that their granular structure cannot be determined. Blue as in all birds is a structural color but just what physical peculiarities of the feather produce it has not yet been determined. An interesting point in the author's paper is that he finds that the black pigment may exist either in spheres or in rods so that genetically speaking we may have two different blacks which to the eye appear absolutely identical. Mr. Lloyd-Jones is to be congratulated upon a piece of careful work in a field which offers opportunities for many important investigations.— W. S.

Grinnell on Distributional Control.[2]— Dr. Grinnell's object in this interesting paper is to demonstrate that data secured through field observation can be so employed as to bring results essentially similar to, and just as conclusive as, those secured through laboratory experimentation, in determining the factors which govern the delimitation of animal habitats.

The cases of several species of bird and mammals are considered in detail and the possible effect of various environmental factors is carefully weighed.

Dr. Grinnell finds that in the majority of cases which he has studied, temperature looms up as the most frequent delimiter of distribution, but he argues that this fact is in no way antagonistic to the claim that other factors such as humidity, food-supply and shelter also figure critically. The paper is suggestive and gives one a deeper insight into the complications of a problem that we are perhaps too much inclined to regard as entirely solved.— W. S.

Recent Publications of the U. S. Biological Survey.— Three bulletins have recently been issued by the U. S. Biological Survey. One of

[1] A Microscopical and Chemical Study of Feather Pigments. By Orren Lloyd-Jones. Jour. Exper. Zoöl., Vol. 18, No. 3, April, 1915, pp. 453–495, pll. 1–7.

[2] Field Tests of Theories Concerning Distributional Control. By Joseph Grinnell. American Naturalist, LI, pp. 115–128, February, 1917.